

**MassBays National Estuary Program**  
***Program Highlights from April 2017 through July 2017***

**Upper North Shore**

- Gather data on conditions and trends [DATA]
  - Marsh Edge Erosion (MEE) Assessment: RTK GPS and associated data collection from the 22 sites in Great Marsh has been completed for the Marsh Edge Erosion. Pre-winter and spring (erosional period) data are being analyzed to determine rates of loss.
- Manage invasive species [IS]
  - Great Marsh Pepperweed Monitoring and Control: The RC led the planning and is leading the treatment efforts in Newbury, Ipswich, Salisbury and Newburyport.
  - Green Crab Population Monitoring: 13 sites in Essex Bay and 11 sites in Plum Island Sound were monitored in April. April results pointed towards an above normal population of green crab in 2017. Subsequent intermittent monitoring and first round July monitoring indicates the populations may not be as large as April data indicated and this merits further monitoring and investigation.
  - MIMIC: Monitoring of marine invasive species for the 2017 season has begun. Data will be submitted to CZM at the end of the season. Results will be made available on MORIS.
- Adapt to/mitigate impacts of climate change [CC]
  - Eelgrass restoration: Eelgrass harvest and restoration efforts continued in Essex Bay between April and June. Recent results indicate eelgrass to be thriving in Essex Bay, showing increase in habitat structure and trophic level and food web stability in the restored meadow comparable to donor sources. It is important to note that the success of transplanting efforts is largely dependent on youth and community engagement.
  - A Drought Task Force was developed to focus on impacts of drought and how to manage these impacts in wetlands on the north shore.
  - On May 3, the Great Marsh Resiliency Partnership (which includes MassBays and the RC) received an EPA Environmental Merit Award for their work to reduce the vulnerability of communities to coastal storms, sea level rise and other climate change impacts. The project takes a holistic approach including near-term restoration activities and long-term modeling and planning, navigating the complex connections between natural resource conservation and socioeconomic priorities, jurisdictional authority, and diverse management values. From 2015-2017 accomplishments included: eradicating invasive pepperweed and common reed from >400 ac of saltmarsh, establishing 3000 ft of dunes in vulnerable coastal infrastructure, reintroducing eelgrass in subtidal areas, implementing a populating monitoring and management program for the invasive green crab; developing a comprehensive Great Marsh Coastal Adaptation Plan, and identifying >1200 barriers for retro fits and upgrades.
- Removing barriers to streamflow and tidal flushing [SF]
  - Marsh Impoundment project development – This effort is in its infancy and just beginning to be designed. Mosquito ditching has caused overdraining and underdraining of the marsh and the working group is still trying to understand its extent. Pilot projects are being developed. The first step is to get state and federal regulators on board to determine what permitting is needed to implement the pilot projects.
- Conduct education and outreach [E&O]
  - Green Crab Population monitoring: (1) Several green crab outreach events were supported by the RC including presentations/tastings at Ipswich Town Hall, the Clam, Crab and Cask Festival; Ipswich Brewery, Ipswich Chamber of Commerce, Woodman's and Tonno testing for legislators. (2) A green crab R&D nonprofit has received a \$20k grant to expand culinary marketing.

- Other
  - Two research technicians were hired to provide support for field projects taking place in the summer.
  - Merrimack River Beach Alliance erosion presentation and development of erosion subcommittee for dredging and dune nourishment A general overall presentation was given to the larger group by the model developer while a more detailed presentation was given by me to the MRBA erosion subcommittee to orient them in how to determine what options and scenarios are available for selection sand placement and acquisition options. Two acquisition options included Piscataqua River dredge material and Merrimack River dredge material. There were multiple options for sand placement depending on costs and sand source.

### Lower North Shore

- Gather data on conditions and trends [DATA]
  - Working on a Tree Ordinance and a Tree Inventory for the City of Salem; ESRI Story map completed for the pilot study which will be updated when the current inventory completed this fall.
- Adapt to/mitigate impacts of climate change [CC]
  - Accepted into the new state program to be trained as a Municipal Vulnerability Preparedness Provider this September; 3 Lower North Shore communities received MVP grants - Marblehead, Peabody and Manchester - and I hope to work with them.
  - Assisted the City of Salem on grant applications for a continuing CZM CPR Winter Island Stormwater grant and a CZM Coastal Resiliency grant at Collins Cove and wrote letters of support for Beverly and Manchester grant applications.
  - Made public presentation on June 8 to Salem Conservation Commission about the living shoreline at Collins Cove and the MEPA ENF; completed a ESRI Story Map at <http://salemsond.org/researchResources.html>
  - Working on a Tree Ordinance and a Tree Inventory for the City of Salem; ESRI Story map completed for the pilot study which will be updated when the current inventory completed this fall.
- Reduce wastewater discharge [WW]
  - Clean Beaches and Streams Program: Completed FY17 report with list of hotspots and began sampling this summer at 14 sites
- Reduce stormwater discharge volumes and pollutant loadings [SW]
  - Greenscapes: Greenscapes recruiting communities for FY18, developed MS4 rack card for distribution, updating new Greenscapes website and reached 1146 students, 44 teachers and 103 adult volunteers with our "Keeping Water Clean" 5th grade school program.
  - Low-Impact Development: Salem's Commercial Street Rain Gardens (5) have been adopted by Salem Sound Coastwatch. We cleaned them in April and weeded, fertilized and pruned in June with 30 employees from Cell Signaling. This fall we will be weeding, planting and cleaning again. We are studying the level and salinity of water inundation to determine with the correct plantings for each rain garden. I will be leading a North River Walk and Talk on September 23 for the Essex Heritage Trails and Sails. (DSC09406.jpg)
  - Adopt-a-Beach program: Held 2 training sessions for 26 new volunteer beachkeepers, conducted clean ups at 12 beaches.
  - RC helped the City of Salem publicize their single-use plastic bag reduction ordinance that goes into effect January 2018. Two of our *Talking Trash for Clean Beaches* high school interns have begun a similar call for an ordinance in Beverly.
- Conduct education and outreach [E&O]
  - The Power of Salt Marshes: Barbara shares the importance of salt marshes on Chronicle's show on Salt (WCVB Channel 5). <http://www.wcvb.com/article/chronicle-the-power-of-salt-marshes/10326708>

## **Metro Boston**

- Connect people with sound science and best practices for the management of estuarine resources
  - The RC co-hosted Green Infrastructure for Coastal Resilience workshop on March 31.
  - Boston Harbor Habitat Atlas – mutually parting ways with EOL as the host, identified new platform (StoryMap) and technical support to launch new Atlas platform; working with relevant experts, about 60% of content gathered for 3 new habitats: diadromous fish passage, salt marsh, and sandy beach
- Report on current, recent, and seminal ecological research in the Metro Boston region:
  - Initiated a study to characterize environmental issues in the Lower Neponset, specifically around the longstanding proposal to remove the T&H dam, reports of persistent illicit discharge, and questions related to equitable public access to the river; information-gathering involved a dozen meetings with numerous stakeholders
- Engage stakeholders in opportunities to share and/or participate in research, management, and education
  - On April 11-12, held the Boston Harbor & Islands Science Symposium, which engaged 196 people in field trips, panels, concurrent and lightning talks, and keynote presentations.
  - Met 1:1 with officials from 11 out of 12 of the municipalities in the Metro Boston to discuss needs, interests, and priorities; this has resulted in engagement in a project with potential to assist the Town of Winthrop in developing interpretive signage for a new salt marsh boardwalk being constructed this summer in collaboration with DCR. Discussed potential to launch a phone or web-based info-sharing group, will pilot in FY18.
  - The Boston Harbor Habitat Coalition became the Boston Harbor Ecosystem Network at the May meeting, which was attended by 32 people. Featured presentations focused on diadromous fish passage, climate resilience and the regional food distribution center in Chelsea/Everett, and the Rumney Marsh. The recently-formed BHEN steering committee convened several times, and decided to host its first field trip, to the Rumney Marsh. This was held on June 27, and was attended by 30 people, many of them new faces to the group.
  - The first draft of a social network analysis of Metro Boston region organizations was completed in time to be presented by poster at the BH&I Science Symposium in April. Thirty organizations participated, though more will be sought to do so this summer. This will give us a snapshot of “who is working with whom”.

## **South Shore**

- Gather data on conditions and trends [DATA]
  - Anadromous Fish: Trained and managed volunteers (including Boy Scouts), counted fish at Tidmarsh Farms and Great Herring Pond, planned herring outreach for fishing tournament, management of South River for fish passage, tested camera system, attended meeting about Pembroke herring run, coordinated herring count data entry, electrofishing with DMF.
  - Shellfish Restoration: Planned and conducted Gulf River shellfish surveys, reviewed information from Cohasset warden
  - Eelgrass mapping and monitoring in DKP: Helped develop scope and budget with an associated timeline starting July 2017.
  - State invertebrate monitoring program support: Planned and conducted horseshoe crab surveys and trained volunteers, wrote report on horseshoe crabs for NSRWA e-news.
  - Coastal acidification monitoring: Provided background on project to media and followed up on project progress
- Adapt to/mitigate impacts of climate change [CC]
  - Vegetation response to sea level rise: Reviewed one-pager for dock project, planned survey protocol and created draft datasheet

- Manage invasive species [IS]
  - Marine Invasive Monitoring: RC attended MIMIC meeting to plan and prepare for the 2017 season.
- Reduce stormwater discharge volumes and pollutant loadings [SW]
  - RC provided technical supported to the Town of Plymouth's CPR grant proposal.
  - RC supported the Town of Kingston's CPR grant proposal to address temporal and spatial expansion of open shellfish beds.
- Remove barriers to streamflow and tidal flushing [SF]
  - Dam removals and stream continuity: Bound Brook - Hunters Pond pre-construction meeting and site visit for breach; Third Herring Brook - Tack Factory removal celebration, checked status of beaver dams and logs downstream, completed semiannual NOAA reporting and bimonthly call, applied to transfer funding to Peterson Pond, deployed GoPro in the channel, bid preparation and documents for Peterson Pond, cleared stream for PIT tagging antenna and installed antenna at Mill Pond, pulled purple loosestrife at Tack Factory, collected data from purple loosestrife quadrats; South River - Assisted with management of South River, discussed Temple Street Dam, reviewed South River FAQ
  - Streamflow restoration: Attended public meetings about Reservoir project, discussed modeling with SWMI project team, completed Scituate water use analysis and wrote water use profile report
- Conduct education and outreach [E&O]
  - Estuarine Stewardship and Education: Attended State of the Harbor forum as a panelist/presenter/mentor, planted beach grass with Scituate 4th graders, outreach to kindergartens in Duxbury and Plymouth about coastal habitats
  - South Shore-specific outreach and communications: Attended South Shore Coalition legislative breakfast, attended South Shore Conservation Network organizational meeting, attended Watershed Action Alliance meetings and helped plan 2018 workshop

## **Cape Cod**

- Gather data on conditions and trends [DATA]
  - Inventory and prioritization of coastal habitat restoration and stormwater projects for funding: APCC's Restoration Center staff and the RC have completed a prioritized list of projects. A report was submitted to MassBays describing the process and presenting findings and recommendations.
  - Herring counts, 2017: Volunteers conducted visual counts at 19 runs, including 8 on Cape Cod Bay. QA/QC review is underway. Several runs also had electronic counters, including Stony Brook, which will enable comparison of run size estimates using visual counts with electronic counts. There are issues with electronic counters, but ultimately the best available method should be used to estimate herring populations.
  - Monitoring juvenile herring: APCC's Whitlock intern is developing a research plan to monitor juvenile herring using video counting methods. The RC helped the intern obtain approval from the Conservation Commission and assisted with coordination with DMF, Town officials, and others. Partners include the Town of Brewster, MIT Sea Grant, DMF, and Cape Cod Cooperative Extension. Installation at Stony Brook is planned for 7/25.
- Remove barriers to streamflow and tidal flushing [SF]
  - Implement coastal habitat restoration and protection projects:
    - Site visit to potential restoration projects for CCWRRP Phase II: In the event that federal funding becomes available for Phase II of the Cape Cod Water Resources Restoration Project (CCWRRP), staff from APCC and NRCS attended site visits to potential restoration sites on Cape Cod. These included fish runs, salt marshes and stormwater remediation sites.
    - Salt marsh restoration projects, Herring River and Mayo Creek salt marsh restoration: Provided letters of support for the Herring River and Mayo Creek salt marsh restoration projects. Unfortunately the Mayo Creek project did not receive an MET grant.

- APCC's three summer interns are working on projects that will support monitoring and restoration, including salt marsh monitoring, testing cyanobacteria monitoring methods, videomonitoring of juvenile herring, mapping natural communities, and outreach.
- Reduce contamination from stormwater [SW]
  - 604b grant awarded to form Cape Cod Stormwater Coalition: In June the Cape Cod Commission was awarded a 604b grant to form a Cape Cod Stormwater Coalition to help towns meet their MS4 needs. In the previous quarter APCC had worked with the Commission and 10 towns to prepare the proposal. The project includes a needs assessment, cost assessments for towns, and development of tools and recommendations to form a cost-effective and environmentally effective stormwater coalition. The RC began working with the Commission on information collection.
  - 319 proposal for stormwater and tidal restoration in Brewster: The RC prepared a 319 grant proposal for the Town for stormwater remediation and tidal restoration at Crosby Landing Beach at the western end of Namskaket Marsh in the Inner Cape Cod Bay ACEC. APCC will conduct pre- and post-restoration monitoring of the tidal marsh. Crosby Landing Beach was identified as experiencing net accretion, according to a sediment budget study conducted by the Center for Coastal Studies, suggesting the long-term sustainability of a salt marsh restoration project appears good.
- Adapt to/mitigate impacts of climate change [CC]
  - Thin layer deposition (TLD) for salt marsh restoration: Two summer interns are developing criteria to identify potential salt marsh restoration sites that may benefit from TLD using literature reviews, interviews of practitioners and experts, and site visits. Cape Cod may be ideally situated to test and use TLD because of the many dredging projects.
- Conduct education and outreach [E&O]
  - In July APCC issued two press releases urging stormwater management, one concerning the postponement of the MS4 stormwater permit, and a second one concerning the closure of shellfish beds in the Upper Cape due to an extreme rain event on July 7.

## Executive Director

- Meetings and conferences
  - Attended Association of National Estuary Programs' Annual Meeting and NEP National Meeting May 1-3. Presented two lightning talks to spark discussion: "[Do-it-Yourself Stakeholder Outreach](#)" and "[Regional Collaboration Case Study: NEOSEC](#)"
  - Attended Citizen Science Association Conference, including a full-day workshop re: data quality, metadata, and data management; presented findings from citizen monitoring surveys and plans for our Citizen Monitoring Coordinators' Network using this [prezi](#) (May 17-20, St Paul MN).
  - Presented Summary of Findings from the Massachusetts Tide Gate Inventory ([download ppt](#)) at a Northeast Regional Ocean Council-sponsored workshop on marsh migration (June 7, Newbury).
- Partnerships and Collaboration
  - Reviewed 23 full proposals submitted to Massachusetts Environmental Trust, met with review committee (May 4, Boston).
  - Participated in EPA Appreciation effort (May 11, Boston)
  - Participated in NERACOOS Board of Directors meeting (May 22, online)
  - Reviewed 20 proposals to DEP's 319 grant program, served on review committee (June 27, Worcester).
  - Began planning for the Fall 2017 Technical Transfer Conference of the National Estuary Program, to take place in Boston November 2-4.
  - Participated in conference calls with Association of National Estuary Program colleagues (May 16, 30, July 11).
- Program Management
  - Attended state training session regarding new mass.gov platform (May 8, Boston)

- Met with each Regional Service Provider/RC to review 2017-2018 scopes of work (June 7, Newbury; June 13, Lynn; June 15, Dennis and Norwood).
- Reviewed draft workplan with EPA Region 1 (June 8, Boston), submitted final FFY2017 workplan to EPA (July 11).
- In consultation with EPA Region 1, developed draft “roadmap” for completing the CCMP per EPA’s 2016 guidance, and discussed plans for NEP Tech Transfer meeting (July 20)
- Convened Nominating & Governance Committee to nominate Chair and Vice Chair candidates (June 29, conference call).

## **Staff Scientist**

- EDA 2.0
  - The report and updated maps from the consultant are now available and have been shared with NUMSC who will switch out the EDA1.0 maps and revise the categorization of embayment types and associated targets. It is anticipated that NUMSC will provide a draft report by January 2018. EDA2.0 describes 69 assessment units that include estuarine embayments and “interembayments” that include rocky shores, headlands and (barrier) beaches.
  - MassBays has been working with EPA ORD to explore the applicability of tools, specifically the Biological Condition Gradient (BCG) developed by EPA (2006) that may help MassBays set and implement target conditions on estuarine ecosystems. The next step is to present this approach to STAC for discussion and recommendations.
  - MassBays has been invited by the Peconic NEP to provide a presentation of the EDA2.0 process. The PNEP is currently planning to put together a monitoring plan and feel that MassBays’ approach (which the PNEP Director witnessed during the April STAC meeting) will serve as a good model for the PNEP’s work. A webinar is scheduled for October (exact date TBD) and the management committee will be invited to listen in. More information forthcoming.
- Science and Technology Advisory Subcommittee (STAC)
  - STAC met April 25. During the meeting, a presentation of the overall EDA process and how the embayment characterization together with monitoring program data will serve to track and report on changing conditions in the bays was provided to the EPA Program Evaluation team. The EPA team had the opportunity to participate in the discussion that followed on next steps.
  - The next STAC meeting is scheduled for August 10. The agenda will include a comprehensive presentation of the BCG, how it works and its benefits. STAC will then discuss the applicability to MassBays and make recommendations for the management committee. The presentation will be recorded for those who may not be able to participate.
- Research projects
  - Coastal Acidification Project: MassBays continues work with UMass Boston on the construction of the coastal acidification observing system. The plan is to deploy by September 1. UMass Boston and MassBays have submitted a proposal for FFY18 MIT sea grant funding to expand on the coastal acidification system (more information forthcoming).
  - Eelgrass Mapping Project: (1) The final report of eelgrass mapping in Salem Sound using a protocol similar to the one applied in Duxbury-Kingston-Plymouth in 2015 is now available on MassBays’ website. Maps will be available shortly. (2) In spring EPA provided funding for additional work in DKP based on some concerning findings in 2015 of substantial loss in eelgrass extent and deteriorating condition in the embayments, especially Duxbury. DMF and MassBays/NSRWA are working closely to possibly develop a rapid assessment protocol that can be applied by citizen scientists in order to keep a closer eye (by more frequent monitoring) on conditions in DKP as we try to figure out the causes of these losses.